

### REMARKS

Claims 6-10 have been submitted for examination. Claims 6-10 have been rejected as being obvious over Setzer et al '746 in view of Olah. Claims 6-10 have also been rejected, for the first time, as being indefinite and thus failing to comply with 35 U.S.C §112, second paragraph. We note here that Claims 6-10 have not been amended. Thus the finality of the rejection of these claims under 35 U.S.C. §112 is improper and should be withdrawn. The Examiner is not free to put forth a final rejection of claims that have not been amended, which final rejection is based on new grounds. We kindly suggest that the Examiner check with her supervisor re this point. On page 6 of the office action, the Examiner apparently attempts to buttress her improper indefinite final rejection stating that "Apparatus or system, and process or method, are both classes of patent-eligible material and may be claimed in the same patent, but single claim that purports to be drawn to both apparatus and process is ambiguous and properly rejected as indefinite under 35 USC §112.". The reason that this application has been filed is only because of a restriction requirement put forth in the parent application, which alleged that Claims 1-5 and Claims 6-10 were drawn to different categories of inventions, one set to a method and the other set to a system for performing that method. There are not, and never were, any claims in this application or its parent that are drawn to both a system and a method. The Examiner's allegations to the contrary are clearly erroneous.

Page 2 of the Office Action reiterates the "reminder" of the contents of an abstract. When asked to more clearly focus the point of the reminder, the Examiner has kindly noted that the Abstract failed to include the term "system", but instead included the term "method". Applicant has amended the Abstract to correct that perceived flaw in the Abstract. Thus we submit that the objection to the specification has been rendered moot.

The Examiner has conceded that a "system" is a statutory category of invention. The claims in the instant application are directed to the system shown in Fig. 1 of the application and clearly and succinctly describe the utility of the system in question. Nevertheless, the Examiner states, once more, that "it has been determined that the claims are directed to an apparatus" and apparently not to "a system". The Examiner is not free to "determine" that the claims are directed to something else, as she claims to have done on page 2 of the Office Action. How was this "determination" made? In this regard, we kindly point out to the Examiner the contents of 35 USC 112, para. 2, which states that: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which applicant regards as his invention." (emphasis added).

### The §103 Rejections

Claims 6-10 stand rejected as being obvious over Setzer et al '746 and further in view of

Olah.

The grounds for this rejection is essentially a regurgitation of the same grounds put forth in the first office action, even to the point of reiterating the erroneous statement on page 4 of the office action that Setzer et al “does not disclose wherein the H<sub>2</sub> additive is derived from a container of H<sub>2</sub>”. We have informed the Examiner in our response to the first office action that this statement is not true. We kindly inquire of the Examiner if she notices that that allegation made by her, twice now, is erroneous.

The Examiner characterizes the Olah reference “discloses the production of hydrogen using fuel cells” (see page 5, O.A.). Hydrogen is derived from natural gas, or it is derived from a source of pure hydrogen in operating a fuel cell power plant. Hydrogen is not produced by fuel cells, fuel cells in a fuel cell power plant **consume** hydrogen. They don’t produce it. They produce water which is simply discarded or, if hot, is used as a heat source. We kindly point this fact out to the Examiner. The hydrogen is typically produced in a fuel reformer in the power plant and then consumed by the fuel cells in the power plant.

On page 4 of the office action, the Examiner offers comments regarding “limitations recited in claim 6 which are directed to a manner of operating disclosed device, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art.” (citing the MPEP). The Examiner further states that: “Further, process limitations do not have patentable weight in an apparatus claim.”, citing Ex parte Thibault, a board of appeals decision dating back to 1969. These comments from the Examiner are clearly erroneous. What the Examiner insists are “process limitations” are in fact functional limitations, and, as such, they must be considered, and cannot be ignored as the Examiner has done here.

There are a myriad of decisions that support our position here. The Court of Customs and Patent Appeals has stated in In re Miller, 169 USPQ 597, at 599 (CCPA 1971) that: “there is no merit in any proposition which would require the denial of the claim solely because of the type of language used to define the subject matter of which patent protection is sought.”. Thus, in the case of an apparatus claim, the use of a functional “type of language” cannot, per se, and without more, support a rejection of that claim under the statute. Note that the Court used the phrase “any proposition”. See also: In re Swinehart, 169 USPQ 226, at 228 (CCPA 1971) wherein the Court stated that the word “Functional” indicates nothing more than the fact that an attempt is being made to define something by what it does rather than by what it is. The Court found nothing intrinsically wrong with the use of such a technique in drafting patent claims. See also: In re Benson, 164 USPQ 22 (CCPA 1969); ZMI Corp. v. Cardiac Resuscitator Corp., 6 USPQ 2nd

1557 (Fe. Cir. 1988); and Intel Corp. v. U.S. International Trade Commission, 20 USPQ 2nd 1161 (Fed. Cir. 1991). In In re Halleck, 164 USPQ 647 (CCPA 1970), the Court specifically recognized the practical necessity of using functional language in patent claims. See also, Ex parte Sherman, 45 USPQ 532, 534 (Pat. Off. Bd. App. 1939); In re Land, 151 USPQ 621 (C.C.P.A. 1966); In re Mills, 16 USPQ 2nd 1430 (Fed. Cir. 1990); and In re Ludtke, 169 USPQ 563, 566 (C.C.P.A. 1971) (citing In re Swinehart). We would kindly advise the Examiner to read some of these decisions, especially In re Miller and In re Swinehart.

We reiterate that in analyzing the contents of the Setzer et al reference on page 4 of most recent the office action, the Examiner has once again referred to the conversion by Setzer of gasoline or diesel fuel to a low sulfur content fuel. We kindly remind the Examiner that JP-4 fuel is jet fuel, not gasoline or diesel fuel. In Setzer et al, the desulfurized jet fuel has a sulfur content of about 20 ppm (Col. 3, line 16).

On page 6 of the office action the Examiner implies that the Setzer et al teachings are capable of producing "the desired product" (here a fuel gas stream with no more than about 0.05 ppm sulfur). Setzer et al itself does not support this statement of the Examiner's. The difference between the acceptable amount of sulfur in Setzer et al, and the acceptable amount of sulfur in the claimed subject matter is a multiple of 400, i.e., 20 ppm sulfur is ~~400~~ times 0.05 ppm. There is no suggestion in Setzer et al (which describes a 30 year old desulfurization technology) that the Setzer et al technique is "capable" of achieving an effluent of 0.05 ppm sulfur, and the reference does not suggest that such an effluent is necessary or desirable. The Examiner's implication that if the 20 ppm sulfur content is achievable, then the 0.05 ppm sulfur content is achievable using the Setzer teachings is erroneous and is not supported by the reference in question. Note that this §103 rejection is based on only a single reference, which does not suggest the desirability of, or support for the Examiner's contentions as to sulfur scrubber effluent sulfur content. Note that the reference does not suggest that there is any problem with a sulfur scrubber effluent which contains 20 ppm sulfur. Stated simply, Setzer does not motivate anyone of skill in the art to strive to reduce the amount of sulfur in the fuel to 1/400 times 20 ppm, i.e., 0.05 ppm which is required by the claims in the instant application.

On pages 8 and 9 of the office action, the Examiner addresses the patentability of the dependent claims in this application. The Examiner takes the position that Claims 7, 9 and 10 are rendered obvious by the combination of the Setzer et al reference and the Olah reference. Regarding the latter reference, the Examiner states that "The Olah reference was used to teach the production of hydrogen using fuel cells +++. ". The rejection based on the combination of the references put forth by the Examiner is merely that it would have been

obvious to modify the process of Setzer et al to utilize the fuel cells of Olah. We presume that the Examiner means that it would have been obvious to desulfurize the fuel used by the Olah fuel cells as taught by Setzer et al. Olah refers to the use of natural gas which is reformed to produce a hydrogen-enriched fuel gas for fuel cells. These natural gas fuels do not require desulfurization, thus there would be no motivation to desulfurize them. This reference also refers to methanol and other hydrocarbon fuels as not requiring reforming to produce a hydrogen-enriched fuel stream for the fuel cells. There is no sulfur in methanol. There is no indication in Olah that they are considering using any type of fuel that would need desulfurization. Thus there would have been no motivation to desulfurize a fuel that does not include sulfur in it. If the Examiner thinks something otherwise, the she is kindly requested to point out what that otherwise something is.

In analyzing the proposed combination of Setzer et al and Olah in connection with the rejection of Claims 7, 9 and 10, the Examiner states simply that these would all be obvious sources of the hydrogen for the desulfurization bed "because the Setzer et al reference generally discloses of hydrogen additive in a desulfurization process and the sources of the hydrogen production is not material to the success of the process." (page 9, OA). We would kindly point out to the Examiner for the umpteenth time that these are claims to a desulfurizing system, not a desulfurizing process. There's a difference and that's why a restriction requirement was put forth that resulted in the filing of this application. As far as the efficiency of the system goes, Setzer et al suggests the use of a container of hydrogen as the source thereof in its desulfurizing system. That means that the container has to be replaced when it is empty of hydrogen. That means that will have to be some device that monitors the amount of hydrogen in the container. This complicates the system. In the claimed system, the fuel cells will always produce water as a source of hydrogen, and will always produce recycled reformed fuel gas as a source of the hydrogen. All three sources of hydrogen in the subject Claims 7, 9 and 10 will be able to provide hydrogen for the desulfurizing bed for the operating life of the bed without needing to be replaced, unlike the container of hydrogen that Setzer et al teaches.

Nothing in the cited prior art suggests the derivation of hydrogen from either recycled reformed fuel gas from a selective oxidizer, or from an electrolysis cell, or from a hydride bed, as previously pointed out to the Examiner.

In summary, there is absolutely nothing in Setzer et al that renders obvious the claim limitation in the instant application of "said H<sub>2</sub> additive being present in said gasoline fuel stream in an amount which is effective to provide an effluent gasoline fuel stream at an exit end of said nickel reactant station which effluent gasoline fuel stream contains no more than about 0.05 ppm sulfur". Furthermore, Setzer et al does not relate to the desulfurization of

gasoline; Setzer et al does not suggest the derivation of hydrogen for use in its process from recycled reformed fuel gas from a selective oxidizer in the fuel cell power plant; and Setzer et al does not suggest the derivation of hydrogen for use in its process from an electrolysis cell; nor does Setzer et al suggest the derivation of hydrogen from a hydride bed.

We submit that the rejections of Claims 6-10 are clearly erroneous and should be reconsidered and withdrawn. The finality of this rejection is also improper and should be withdrawn. Early notice that this application has been passed to issue is courteously requested.

Respectfully submitted,



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